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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/895,789	06/29/2001	Christopher L. Chappell	42390P10985	5575

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EXAMINER

LAYE, JADE O

ART UNIT	PAPER NUMBER
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2617

DATE MAILED: 07/14/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/895,789

Applicant(s)

CHAPPELL ET AL.

Examiner

Jade O. Laye

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 29 June 2001.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) 1-20 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 29 June 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Drawings

1. Figures 1 and 2 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.84(c)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

2. Claims 1-3 & 10-12 are rejected under 35 U.S.C. 102(e) as being anticipated by Monk et al. (US Pat. No. 6,501,809).

As to claim 1, Monk discloses a method of transforming a gapped clock signal into a smoothed clock signal. More specifically, the system comprises receiving a gapped data stream

having timestamp information into a buffer and generating a smooth (i.e., equalized) reference clock via a removal of said gaps. (Abstract; Col. 1, Ln. 20-30; Col. 2, Ln. 16-27; Col. 3, Ln. 33-Col. 4, Ln. 10). Accordingly, Monk et al anticipate each and every limitation of claim 1.

Claim 10 corresponds to the method claim 1. Thus, it is analyzed and rejected as previously discussed.

As to claim 2, Monk further teaches using said reference clock to enable equalized reads from the buffer. Moreover, this would inherently happen upon removal of said gaps. (Col. 4, Ln. 50-64; Col. 6, Ln. 24-34). Accordingly, Monk et al anticipate each and every limitation of claim 2.

Claim 11 corresponds to the method claim 2. Thus, it is analyzed and rejected as previously discussed.

As to claim 3, Monk further discloses the system utilizes a local timebase (i.e., clock signal) generated from said timestamp information, which is used to synchronize the local system with a cable modem termination system ("CMTS"). (Col. 1, Ln. 6-42). Accordingly, Monk et al anticipate each and every limitation of claim 3.

Claim 12 corresponds to the method claim 3. Thus, it is analyzed and rejected as previously discussed.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Monk et al.

Claim 4 recites the method of claim 3, wherein the remote network element is a CMTS, and the received data stream is an MPEG compliant data stream. As discussed above, Monk et al disclose every limitation of claim 3, and Monk further teaches the use of a CMTS. (Col. 3, Ln. 33-45). Moreover, the Examiner takes Official Notice that at the time of Applicant's invention, the use of MPEG streams was notoriously well known in the art. Accordingly, it would have been obvious to one having ordinary skill in this art at the time of applicant's

invention to modify the system of Monk to include MPEG data streams, thereby providing a system with increased bandwidth capacity.

4. Claims 5-9 & 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Monk et al in view of Hamlin, Jr. et al. (US Pat. No. 5,157,655).

Claim 5 recites the method of claim 1, wherein generating the equalized reference clock comprises:

generating an error value representing the difference in writes to and reads from said buffer and;

driving a NCO based, at least in part, on the generated error value.

As discussed above, Monk et al anticipate each and every limitation of claim 1, but fail to disclose the limitations of claim 5. However, within the same field of endeavor, Hamlin discloses a similar system which generates a value based upon reads to and writes from a buffer and drives a *voltage controlled oscillator* based upon said value. (Abstract; Col. 2, Ln. 15-60; Col. 7, Ln. 5-12). The Examiner recognizes Hamlin only discloses the use of a voltage-controlled oscillator. However, the use of a numerically controlled oscillator would have been an obvious variant. Accordingly, it would have been obvious to one having ordinary skill in this art at the time of applicant's invention to combine the systems of Monk and Hamlin, thereby providing a system with reduced jitter via an alternate method of gap removal.

Claim 13 corresponds to the method claim 5. Thus, it is analyzed and rejected as previously discussed.

Claim 6 recites the method claim 5, wherein the error value results to an average clock frequency of the non-equalized input data stream. As discussed above, the combined systems of

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Monk and Hamlin disclose all limitations of claim 5, and Hamlin further discloses the error value results in high frequency changes being filtered out of the signal (i.e., average clock frequency). (Col. 2, Ln. 34-55 & Col. 5, Ln. 17-32). Accordingly, the combined systems of Monk and Hamlin disclose all limitations of claim 6.

Claim 14 corresponds to the method claim 6. Thus, it is analyzed and rejected as previously discussed.

Claim 7 recites the method of claim 5, wherein the output of the NCO enables reads from the buffer. As discussed above, the combined systems of Monk and Hamlin disclose all limitations of claim 5, and Hamlin further teaches the VCO generates an output clock, which controls the speed at which data is read from the buffer. (Col. 2, Ln. 15-55; Col. 5, Ln. 60-Col. 6, Ln. 11). Accordingly, the combined systems of Monk and Hamlin disclose all limitations of claim 7.

Claim 8 recites the method of claim 5, wherein the output of the NCO is represented in the generated error value. As discussed above, the combined systems of Monk and Hamlin disclose all limitations of claim 5, and Hamlin further teaches the output of the VCO is fed back into the buffer, thus creating a closed loop feedback system. (Col. 2, Ln. 34-55 & Fig. 2-4). Accordingly, the combined systems of Monk and Hamlin disclose all limitations of claim 8.

Claim 9 recites limitations which are combinations of limitations recited in claims 7 and 8. Therefore, insofar as they coincide, each is analyzed and rejected as previously discussed therein.

Claim 15 recites limitations which are combinations of limitations recited in claims 1 and 5. Therefore, insofar as they coincide, each is analyzed and rejected as previously discussed therein.

Claim 16 recites the apparatus of claim 15, further comprising limitations too lengthy to recite herein. (refer to claim sheet). As discussed above, the combined systems of Monk and Hamlin disclose all limitations of claim 15, and Hamlin further discloses the use of XOR gates coupled to said counters, which produce a value reflective of said error values. This value is periodically sampled by VCO and used to produce an equalized reference clock. (cited portions were disclosed in previous claim rejections). The Examiner recognizes Hamlin does not disclose the use of a summer. However, the use of a summer is an obvious variant of Hamlin's XOR gate. (Col. 7, Ln. 5-12). Accordingly, the combined systems of Monk and Hamlin disclose all limitations of claim 16.

5. Claims 17-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Monk et al in view of Hamlin, Jr. et al as applied to claim 5 above, and further in view of Burns et al. (US Pat. No. 6,449,291).

Note: For the sake of lengthiness, the following rejections will not contain a recitation of the claim language. Please refer to the claim sheet.

Claim 17 recites the apparatus of claim 15, comprising further limitations. As discussed above, the combined systems of Monk and Hamlin disclose all limitations of claim 15, but fail to specifically disclose the use of an accumulator (*Note: it could be argued this limitation is inherent*). However, within the same field of endeavor, Burns et al disclose a similar system wherein an accumulator is used to generate a signal. (Col. 9, Ln. 62-Col. 10, Ln. 46). Accordingly, it would have been obvious to one having ordinary skill in this art at the time of applicant's invention to combine the systems of Monk, Hamlin, and Burns in order to provide an

alternate cost effective method of synchronizing the clock of a cable modem with the clock of the head end system in a cost effective manner.

Claim 18 recites the apparatus of claim 17, comprising further limitations. As discussed above, the combined systems of Monk, Hamlin, and Burns disclose all limitations of claim 17, and Burns further discloses the use of an edge detector coupled to the accumulators. Once the signal reaches a threshold, the system signifies that it is ready to send data. (i.e., generates a read enable). (Col. 9, Ln. 62-Col. 10, Ln. 46). Accordingly, the combined system of Monk, Hamlin, and Burns disclose all limitations of claim 18.

Claim 19 recites the apparatus of claim 18, comprising further limitations. As discussed above, the combined systems of Monk, Hamlin, and Burns disclose all limitations of claim 18, and Burns further teaches the system will send data once a threshold has been met. The threshold tells the system it has achieve synchrony with the CMTS. Therefore, the read enable (i.e., send data signal) represents the equalized reference clock (i.e., synchronous reference clock). Accordingly, the combined system of Monk, Hamlin, and Burns disclose all limitations of claim 19.

Claim 20 recites the apparatus of claim 19, comprising further limitations. As discussed above, the combined systems of Monk, Hamlin, and Burns disclose all limitations of claim 19, and Hamlin further teaches the use of a feedback loop, wherein the out put of the oscillator is fed back into the buffer. (Col. 2, Ln. 34-55 & Fig. 2-4). Since the system generates a value based upon reads to and writes from a buffer, it is inherent the error value reflects feedback from the NCO. Accordingly, the combined system of Monk, Hamlin, and Burns disclose all limitations of claim 20.

Conclusion

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- a. Renaud (US Pat. Pub. No. 2001/0022823) discloses a method and system for clock recovery.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Jade O. Laye whose telephone number is (571) 272-7303. The examiner can normally be reached on Mon. 7:30am-4, Tues. 7:30-2, W-Fri. 7:30-4.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on (571) 272-7331. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Examiner: Jade O. Laye
July 11, 2005.


NGO-YEN VU
PRIMARY EXAMINER